

• Salt - mix homog.
 • Sugar - mix homog.
 • Wood - pure comp.
 • Rock - pure comp.
 • Water - pure comp.
 • Milk - mix homog.
 • Plastic - mix homog.
 • Glass - mix homog.
 • Mercury - pure elem.

• Apple Juice - mix homog.
 • Syrup - mix homog.
 • Gold - pure elem.
 • Air - pure comp.
 • Oxygen - pure elem.
 • Silver - pure elem.
 • Cookies - mix hete.
 • Cake - mix homog.
 • Sand - mix hete.

Classify the following as:

a) pure or mixture

b) element, compound, heterogeneous or homogeneous mixture


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Sept. 13 Chemical Change

- The starting materials are called reactants and the new materials produced are called products.

• **REACTANTS** → **PRODUCTS**
 Wood + fire → charcoal + smoke
 heat + light energy → ash soot + smell + heat

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 PHYSICAL CHANGE OF WATER INTO ICE


 CHEMICAL CHANGE OF WATER INTO HYDROGEN PEROXIDE

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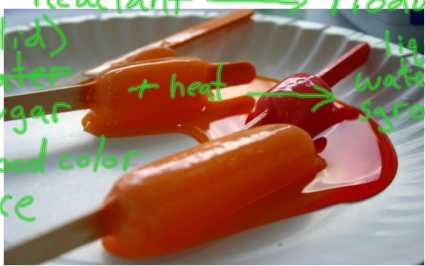
Physical Changes

- Here are some examples of physical changes:

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Melting popsicle


Reactant → Products
 (solid) water + heat → liquid water
 sugar → sugar
 food color → food color
 ice → ice



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Broken Twig

Reactant → Product.
 twig + force → wood + wood



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**Chemical Change**

- Here are some other examples of chemical changes:

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Raw egg becomes cooked egg

Reactant \longrightarrow Product
egg + heat \longrightarrow cooked egg



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Cake mix becomes cake

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Steel becomes rust

R \longrightarrow P



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Your Turn**Chemical or Physical Changes**

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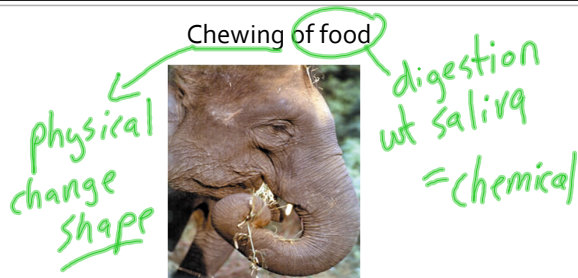
Chemical or Physical ?

Cutting a piece of wood.

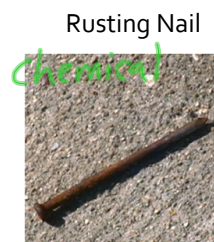
Physical



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Chemical or Physical ?

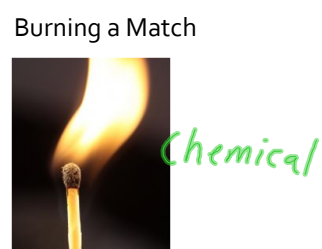
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Chemical or Physical ?

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Chemical or Physical ?

Tarnishing Silver



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Chemical or Physical ?

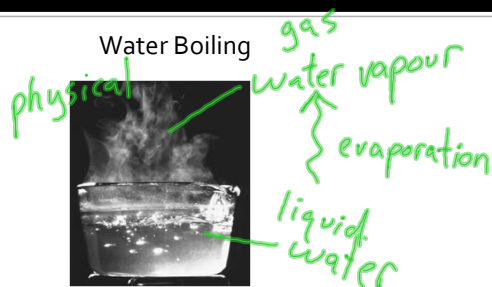
Ripening Tomatoes



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Chemical or Physical ?

Water Boiling



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Chemical Tests

Used to identify unknown substances.

Examples:

- Oxygen gas is indicated if glowing splint bursts into flame
- Carbon Dioxide is present if limewater solution turns milky. (white precipitate)

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Chemical Tests

Examples:

- Hydrogen gas is present if flaming splint makes a "pop."
- Water vapor is present if cobalt chloride paper changes from blue to pink

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The Atom

+

-

make elements

everywhere

small Really

body

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smallest unit

Atoms are made out of three basic particles:

- 1 Protons - carry a positive charge
- 2 Neutrons - carry no charge
- 3 Electrons - carry a negative charge and circle the nucleus

Protons and Neutrons join together to form the Nucleus - the central part of the atom

Click on a particle to learn more about it

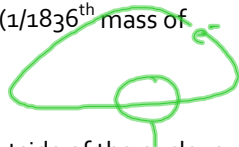
! Fun Facts

taken from: <http://education.jlab.org/atomtour/listofparticles.html>

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Electrons

- Negatively charged (-)
- Almost have no mass ($1/1836^{\text{th}}$ mass of protons & neutrons)
- Located around the outside of the nucleus




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Proton

- Same mass as neutrons
- Positively charged (+)
- Located in center of atom (nucleus)
- Number of protons in an atom is equal to the elements atomic number.


atoms



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Neutron

- Same mass as proton
- No charge
- Located in nucleus
- Number per atom may vary - but is similar to number of protons



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Bohr's Planetary Model of the Atom

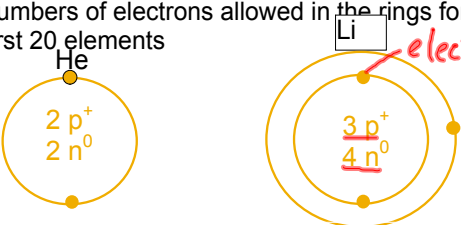
diagrams

- Bohr suggested that:
- Electrons move around the nucleus in circular paths called **orbits**, like planets around the sun.
- Each electron has a definite amount of energy.
- The order of filling of electrons in the first three orbits is 2, 8, 8.
- Electrons are more stable when they are at the lower energy.

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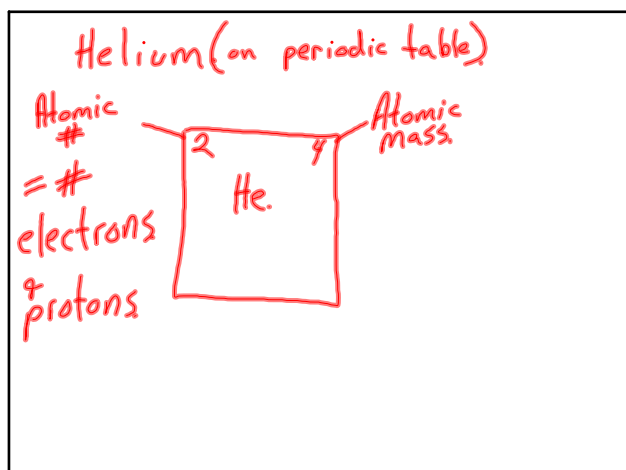
Bohr - Rutherford Diagrams

- Find the # of protons, neutrons, and electrons
- Draw protons (p^+), (n^0) in circle (i.e. "nucleus")
- Draw electrons around in shells - 2,8,8 are the numbers of electrons allowed in the rings for the first 20 elements



electrons

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